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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

CONTENTS SHEET NO.

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SITE PHOTOGRAPH

DESCRIPTION

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY WAKE

PROJECT DESCRIPTION REPLACE BRIDGE NO. 227 ON US 70/US 401/NC 50 (CAPITAL BOULEVARD) OVER PEACE STREET AND REPLACE BRIDGE NO. 213 ON US 70/NC 50 (WADE AVENUE) OVER US 401 (CAPITAL BOULEVARD)

SITE DESCRIPTION BRIDGE NO. 213 ON -FLYOVER-(WADE AVENUE) OVER PIGEON HOUSE BRANCH AT STA. 20 + 48.94

STATE	STATE PROJECT REPERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5121	1	16

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-680. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNOS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIBBILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS WITH THE ACCORDING TO CLIMATIC CONDITIONS NCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- ES:
 THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT
 OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS
 OR CONTRACT FOR THE PROJECT.
 BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS
 FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE
 CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL TURNAGE, J. R. ASHLEY, R. T. EKLUND, M. A. CORY, K. W. ALEXANDER, M. J.

INVESTIGATED BY TERRACON CONSULTANTS FIELDS, W.D. DRAWN BY ALEXANDER, M. J. SUBMITTED BY TERRACON CONSULTANTS OCTOBER 2015

NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

Matthew J. Alexander 1/27/2016

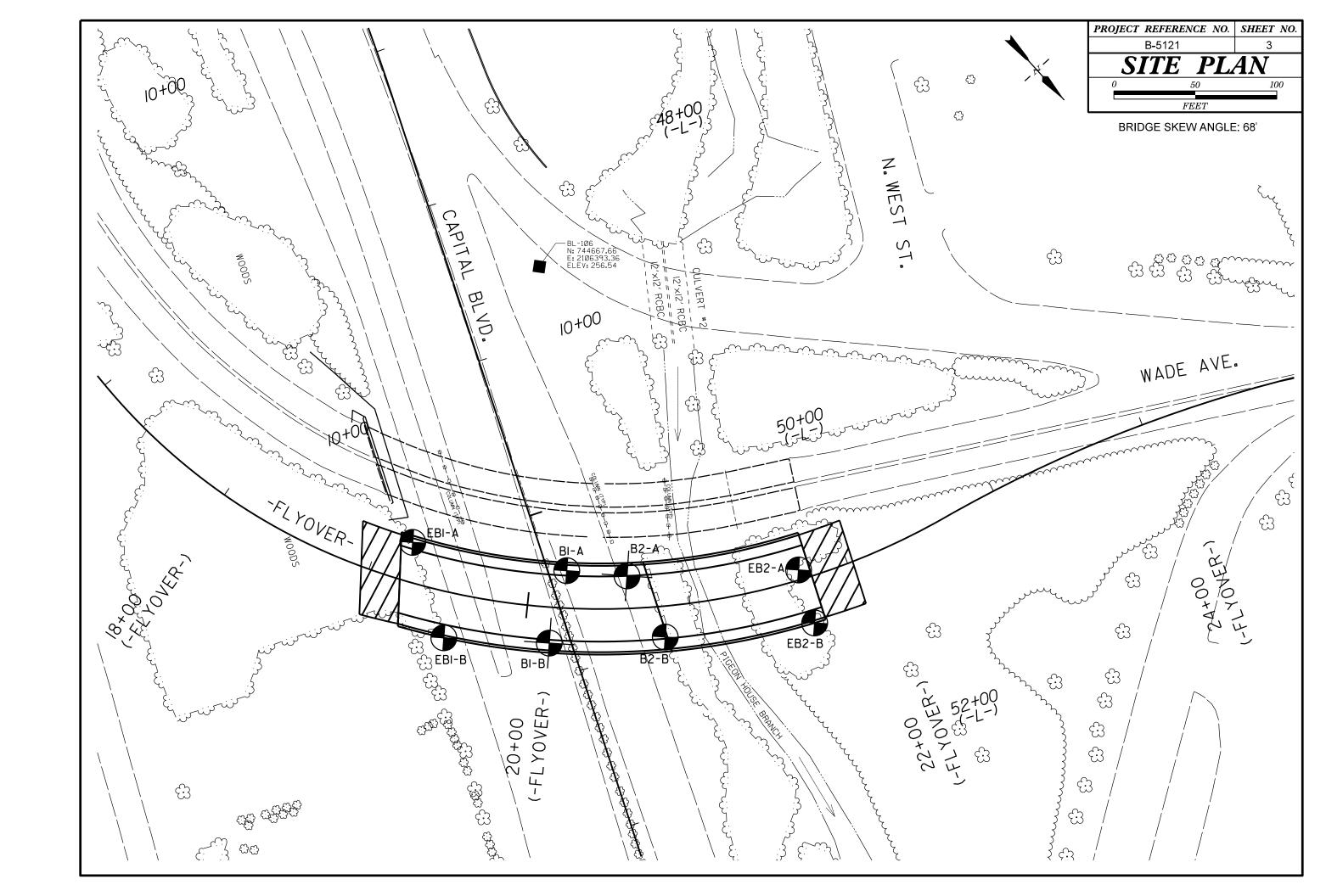
PROJECT REFERENCE NO. SHEET NO. 2

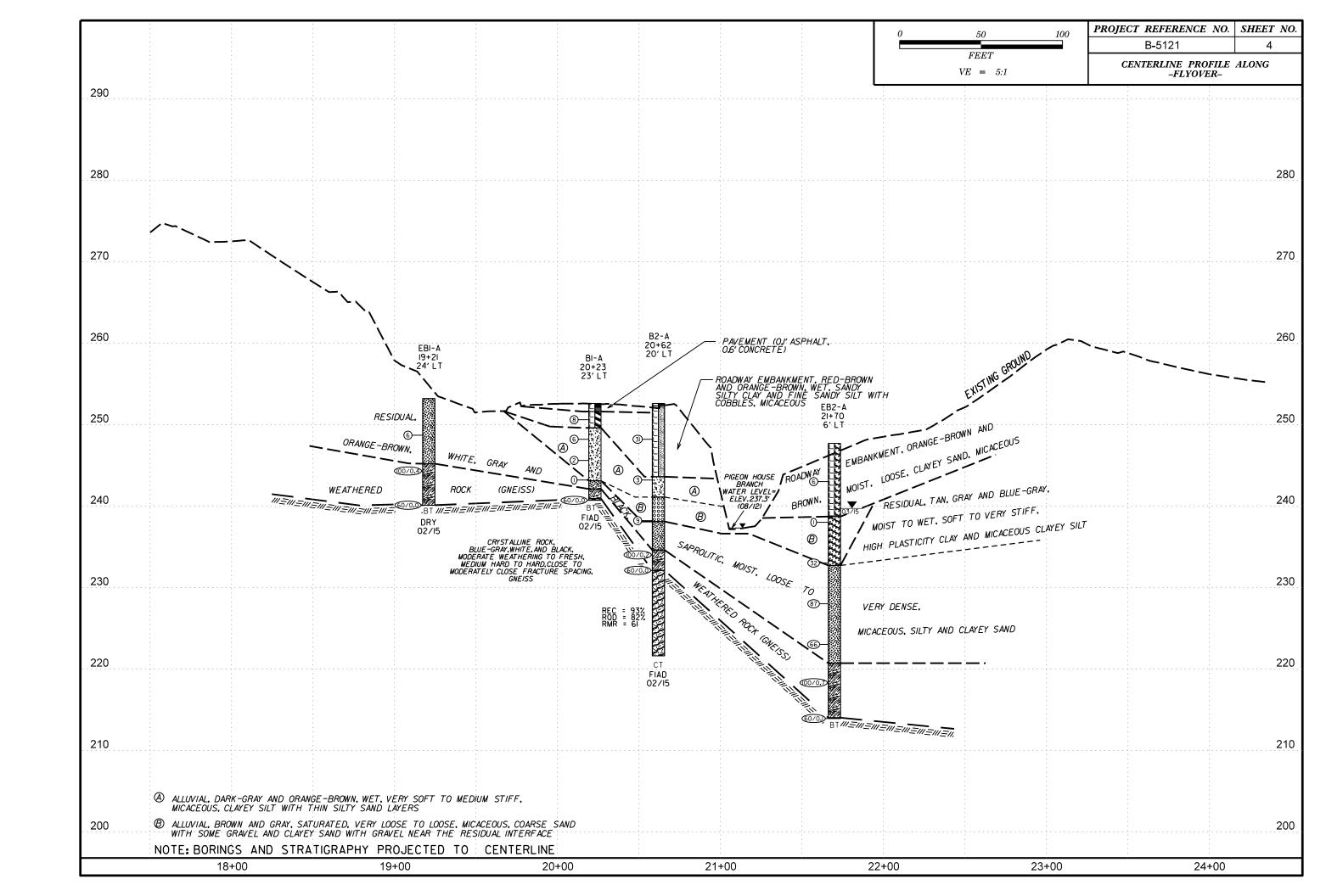
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

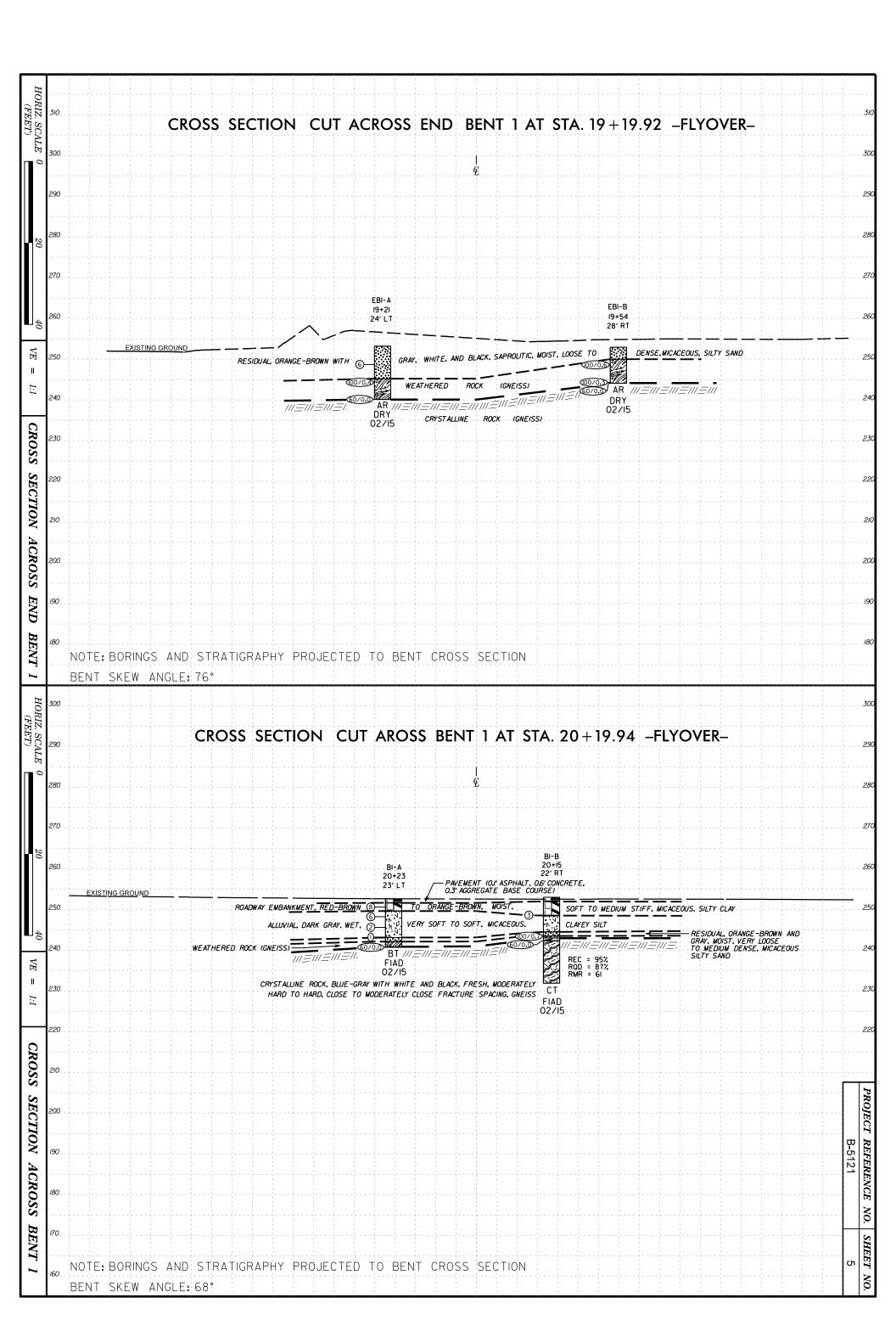
SUBSURFACE INVESTIGATION

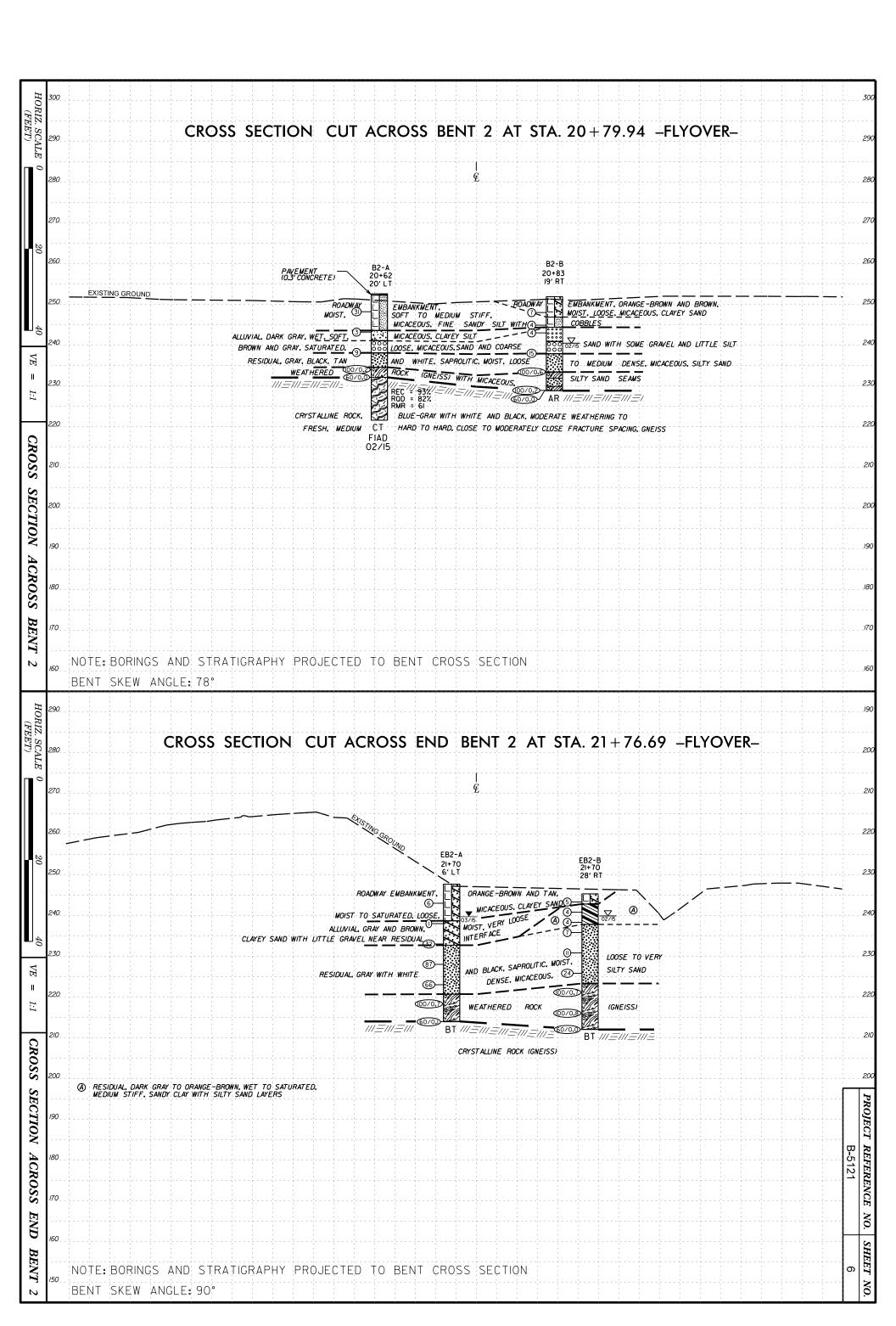
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUYIUM (ALLUY.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM DI586). SOIL CLASSIFICATION	<u>UNIFORMLY GRADED</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. <u>GAP-GRADED</u> - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED VILLY NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
CEMERAL CRAMIII AR MATERIALS SILT-CLAY MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, CNEISS, GABBRO, SCHIST, ETC.	SURFACE.
CROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-0 A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-4-5 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE - FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL COCOGOCOCC	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
555560556000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING S0 MX GRANULAR SILT- GRANULAR CLAY MUCK,	PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*40 30 MX 50 MX 51 MN PEAT SOILS SOILS SOILS SOILS PEAT PEAT SOILS SOILS PEAT	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	WEATHERING	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL STAN STAN STAN STAN STAN STAN STAN STAN	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
PASSING *40 SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
LL — — 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN LITTLE OR HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH,
CROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF CROUP INDEX 0 0 0 0 0 0 0 0 0	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE FRACS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND MATERIALS SAND GRAVEL AND SAND SOILS SOILS	▼ STATIC WATER LEVEL AFTER 24 HOURS	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
CEN BATING EAIR TO		(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30	-	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	FIELD. <u>JOINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
CONSISTENCY CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION DESCRIPTION DESCRIPTION	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4 LOOSE 4 TO 10	SOIL SYMBOL SOIL SYMBOL SUPPLINT TEST BORING SLOPE INDICATOR INSTALLATION	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MATERIAL MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER RODING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AFRATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE > 50	THAN ROADWAY EMBANKMENT TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25	— INFERRED SOIL BOUNDARY — CORE BORING ■ SOUNDING ROD	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MONITORING WELL TEST BORING	COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	A DIEZOMETED	SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	TTT ALLUVIAL SOIL BOUNDARY A FIEZUMETER INSTALLATION SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	USED IN THE TOP 3 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	UNDERCUT UNDERCUT UNDERCUT UNDERCUT UNDERCUT UNDERCUT GEMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN. MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
	CL CLAY MOD MODERATELY γ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE CAUSE FOR EVEN A MOISTURE CAUSE FOR	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{ m d}$ - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
(SAT.) FROM BELOW THE GROUND WATER TABLE LL LIQUID LIMIT	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES I INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC CENTROL ID DECUMENTS TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET - (W) SEMISULIS REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BL-106 (N: 744667.7015; E: 2106393.1254)
	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: 256.54 FEET
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE	
SL SHRINKAGE LIMIT	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6' CONTINUOUS FLIGHT AUGER CORE SIZE:	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	CT - CORING TERMINATED FIAD - FILLED IN AFTER DRILLING
PLASTICITY	CORE SIZE:	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 X HARD FACED FINGER BITS X-N Q2	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	RUBBING WITH FINGER FREES NUMEROUS GRAINS; FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM	VANE SHEAR TEST X CASING W/ ADVANCER HAND TOOLS: POST HOLE DIGGER	CRAINS CAN BE SERABATED FROM CAMBLE WITH STEEL BRODE.	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST X TRICONE 215/6 STEEL TEETH HAND AUGER	MODERATELY INDURATED BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	X CME-75 X TRICONE 2.5% TUNGCARB. SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	X CORE BIT VANE SHEAR TEST	DIFFICULT TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	X D-50	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-
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SITE	DESCF	MOITAR	BRID	GE N	O. 213	3 ON	۱-FL۱	OV/	ER-	(WA	DE .	13VA	NUE) OV	ER F	PIGE	ON F	HOUS	SE BF	RANCH			GROU	ND WTR (
		EB1-					ION						-		ET :					ALIGNMEN		/ER-	0 HR.	
COLL	LAR EL	EV. 25	3.2 ft		T	OTA	AL DE	PTI	1 1:	3.1 ft	:		N	ORT	HING					EASTING	2,106,565		24 HR.	
DRILL	RIG/HAI	MMER EF	F./DATI	E TEF	R6847 (CME-	-75 91	% 0	6/04/2	2013						DRI	LL MI	ETHOD) Н.:	S. Augers		HAMN	IER TYPE	Automatic
DRIL		urnage,				TAR	RT DA	TE					_	OMP	DA	_		2/15	4 . 1	SURFACE	WATER DE	PTH N	/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft		0		25			PER 50	FOO	T 75		100		MP.	MOI	O G	ELEV. (ft)	SOIL AND R	OCK DES	SCRIPTIO	N DEPTH
255	-	 																				ND SURI		
250	249.7	3.5						-			-		-								R NGE-BROW ROLITIC, SIL		E, AND BI	
0.45		† †	2	3	3		6	-			-		- -	· ·	 			M		- - - - 245.2				
245	244.7	+ 8.5 + +	100/0.4				! 	:					- +	- 10 	0/0.4							HERED R GNEISS)	OCK	
	240.1	13.1	60/0.0					-			-		-		 0/0.0				970	240.1	ring Termina	tod WITL	1 CT V VID V	1
		+++++++++++++++++++++++++++++++++++++++																			ENÉTRATIC tion 240.1 ft			

GEOTECHNICAL BORING REPORT

SHEET 7 OF 16

WBS 42263 TP B-5121 COUNT WAKE GEOLOGIST Alexander, M.	
COLLAR ELEV. 252.9 ft TOTAL DEPTH 8.8 ft NORTHING 744,797 EASTING 2,106,590	
COLLAR ELEV. 252.9 ft TOTAL DEPTH 8.8 ft NORTHING 744,797 EASTING 2,106,590	GROUND WTR (f
DRILL RIG/HAMMER EFF./DATE TER6847 CME-75 91% 06/04/2013 DRILL METHOD H.S. Augers HAM	0 HR. Dr
DRILLER Turnage, J. R. START DATE 02/12/15 COMP. DATE 02/12/15 SURFACE WATER DEPTH COMPLETED SAME COMPLETED SAME SURFACE WA	24 HR. FIAI
DENTH BLOW COUNT BLOWS PER FOOT SAMP. Count Count	MER TYPE Automatic
255	N/A
250 249.6 3.3 82 18/0.1	SCRIPTION DEPTH
250 249.6 3.3 82 18/0.1	
250 249.6 3.3 82 18/0.1 250.0 SAPROLITIC, SILTY SAN WEATHERED (GNEISS 244.1 8.8 100/0.3 60/0.0 Boring Terminated WIT PENETRATION TEST Elevation 244.1 ft on CRY	
245 244 6 8 3	ID, MICACEOUS2
45 244 6 8 3 100/0.3 100/0.3 100/0.3 100/0.3 100/0.0 Boring Terminated WIT PENETRATION TEST Elevation 244.1 ft on CRY	
244.1 8.8 100/0.3 Boring Terminated WIT 60/0.0 PENETRATION TEST Elevation 244.1 ft on CRY	
PENETRATION TEST	U STANDADD
	STALLINE ROCK



SHEET 8 OF 16

		BORE L	.UG		
NBS 42263	TIP B-5121	COUNTY WAKE		GEOLOGIST Alexander, M. J	·
SITE DESCRIPTION BRID	GE NO. 213 ON -FLYOVER- (WA	DE AVENUE) OVER	PIGEON HOUSE BR	ANCH	GROUND WTR (ft)
BORING NO. B1-A	STATION 20+23	OFFSET	23 ft LT	ALIGNMENT -FLYOVER-	0 HR. N/A
COLLAR ELEV. 252.6 ft	TOTAL DEPTH 11.9 ft	NORTHING	744,817	EASTING 2,106,507	24 HR. FIAD
	TER6847 CME-75 91% 06/04/2013		DRILL METHOD Mu	-	MER TYPE Automatic
DRILLER Turnage, J. R.	START DATE 02/09/1		TE 02/09/15	SURFACE WATER DEPTH N	I/A
:::: * ELEV		PER FOOT 50 75 100	SAMP. L O NO. MOI G	SOIL AND ROCK DES	SCRIPTION DEPTH (fi
255			J WIGH		<i>DEI</i> 111(11
251.6 + 1.0				252.6 GROUND SUR 251.6 0.1' ASPHALT, 0.6' COI	NCRETE, 0.3'1.0
250 4 4	4 4			· \ AGGREGATE BASE - ROADWAY EMBA I	
2	3 3		M	RED-BROWN AND ORA SILTY CLAY, MICA	
246.6 + 6.0 WOH	1 1 2		W 1/2 V	DARK GRAY, CLAYEY SIL	
244.2 + 8.4 WOH	1 0			243.1	9.5
	1 1 1 1 1 1 1 1 1 1			242.1 GRAY, SILTY S	SAND10.5
240.7 + 11.9 60/0.0	1	60/0.0		240.9 WEATHERED F (GNEISS)	11.9
				CRYSTALLINE (GNEISS)	
				Boring Terminated WITI PENETRATION TEST	H STANDARD
				Elevation 240.7 ft on CRYS	STALLINE ROCK
				(GNEISS)	
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											B	<u>OR</u>		OG							
WBS	42263	3			Т	IP B	-5121			CC	TNUC	Y WA	KE				GEOLOGI	ST Alexande	r, M. J.		
SITE	DESCR	IPTION	BRID	DGE N	0. 213	3 ON	-FLYC	OVEF	R- (W <i>P</i>	DE.	AVEN	UE) O	VER F	PIGEON	HOUS	SE BF	RANCH			GROUN	ND WTR (ft
BOR	NG NO.	B1-B			s	TATI	ON 2	20+1	5			OFFS	ET 2	22 ft RT			ALIGNME	NT -FLYOVE	R-	0 HR.	N/A
COL	LAR ELE	DESCRIPTION BRIDGE NO. 213 ON -FLYOVER- (WADE AVENUE) OVER PIGEON HOUSE BRANCH GROUND WTR (ft) NG NO. B1-B STATION 20+15 OFFSET 22 ft RT ALIGNMENT -FLYOVER- 0 HR. N/A AR ELEV. 253.0 ft TOTAL DEPTH 21.1 ft NORTHING 744,843 EASTING 2,106,545 24 HR. FIAD RIG/HAMMER EFF./DATE TER6847 CME-75 91% 06/04/2013 DRILL METHOD SPT Core Boring HAMMER TYPE Automatic																			
DRILL	Station 20 15 25 25 25 25 25 25 25																				
DRIL		urnage,	J. R.		s	TARI	DAT	E 0	2/08/1	5		COM	P. DA	TE 02/0	08/15	,	SURFACE	WATER DEP	TH N/	4	
ELEV (ft)	ELEV					0					FOOT		100		MOI	0	ELEV. (ft)	SOIL AND RO	CK DES	CRIPTION	
255																	- -	ODOUN	D 011DE	• 05	
250	- - - 249.6	34				 - - -		-		-								.1' ASPHALT, (AGGREGATI).6' CON E BASE (CRETE, 0 COURSE	
	-		1	2	1	j3 j				-					М	77.7		SILTY CLA	Y, MICAC L UVIA L	EOUS	
245	-	t			75/0.2	<u> -</u>		==	 !	 - -						∠ 'Y	<u>244.5</u> - 243.5 243.0	RE:	SIDUAL DWN, SIL	TY SAND	<u>8</u>
240	- -	-	60/0.0					-		-				RS-1			-	WEATH (G	ERED RO NEISS)	OCK	
235	- - -	† - -				: -		-		-		+		RS-2			- FRE	BLUE-GRAY, W ESH, MODERA ⁻ CLOSE TO MO	/HITE, A TELY HA DERATE	ND BLAC RD TO H. LY CLOS	ARD, E
	-						· · ·	<u> </u> :		<u> </u>	· · ·		1					REC=95%, RC	QD=87% at Eleva	RMR=6 ² tion 231.9	1 21) ft in
	- -																- - -	CITIOTALLINI	_110011	(ONLIGO)	1
	- -	<u> </u>															- - -				
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GEOTECHNICAL BORING REPORT

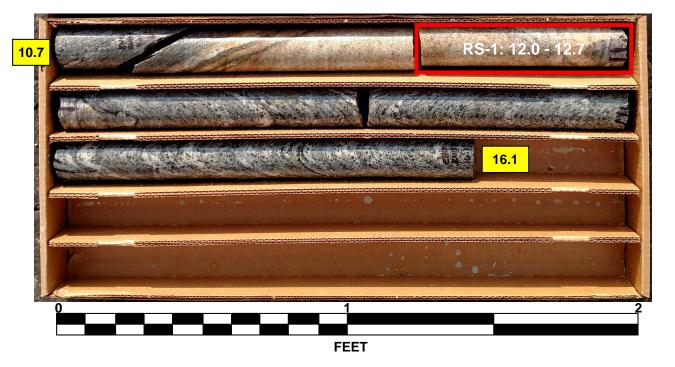
SHEET 9 OF 16

									RE LOG						
WBS 42263				B-512					WAKE	GEOLOGIST Alexander	, M. J.				
		DGE NO.			-	WADE	AVEN) OVER PIGEON HOUSE BRA			┥	ID WTR (ft)		
BORING NO. B			_		20+15			OF	FFSET 22 ft RT	ALIGNMENT -FLYOVE	R-	0 HR.	N/A		
COLLAR ELEV.	253.0 ft		TOT	AL DE	PTH 21.	.1 ft		NC	DRTHING 744,843	EASTING 2,106,545					
DRILL RIG/HAMMER	R EFF./DAT	E TER684						_	DRILL METHOD SPT				Automatic		
DRILLER Turna					TE 02/0			CC	OMP. DATE 02/08/15	SURFACE WATER DEP	TH N/	Α			
CORE SIZE NO		L pplu	1	AL RUI JN	1 10.4 f		ATA	ļ.,	1						
	PTH RUN ft) (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft)	SAMP. NO.	REC. (ft)	RQD (ft)	LOG	D ELEV. (ft)	ESCRIPTION AND REMARK	s		DEPTH (ft		
242.3	77 04	11.00/0.0	(0.1)	(2.0)		(0.0)	(0.0)			Begin Coring @ 10.7 ft					
241.3 Å 11 240 236.9 16 235 231.9 29	5.0	N=60/0.0 1:59/0.4 3:19/1.0 3:30/1.0 3:43/1.0 3:39/1.0 3:41/1.0 4:05/1.0 3:38/1.0 3:47/1.0 4:21/1.0	(0.4) (100%) (4.8) 96% (4.7) 94%	(0.0) 0% (4.8) 96% (4.2) 84%	RS-1	(9.9) 95%	(9.0) 87%		HARD, CLOSE TO	CRYSTALLINE ROCK E, AND BLACK, FRESH, MO D MODERATELY CLOSE FR GNEISS 1=7, R2=17, R3=10, R4=20, F RMR = 61	ACTURI				
+++++++++++++++++++++++++++++++++++++++									Boring Terminat	ed at Elevation 231.9 ft in CR' (GNEISS)	YSTALL	INE ROCK			

CORE PHOTOGRAPHS

42263 (B-5121) BRIDGE NO. 213 ON -FLYOVER- (WADE AVENUE) OVER PIGEON HOUSE BRANCH

B1-B BOX 1: 10.7 - 16.1 FEET



B1-B **BOX 2: 16.1 - 21.1 FEET**



					BORE L	<u>.OG</u>			
/BS 42263			ТІ	IP B-5121 C	COUNTY WAKE			GEOLOGIST Alexander, M. J.	
ITE DESCRI	PTION E	BRIDGE N	10. 213	3 ON -FLYOVER- (WADE			SE BR/	1	GROUND WTR (f
ORING NO.	B2-A		S ⁻	TATION 20+62	OFFSET 2	20 ft LT		ALIGNMENT -FLYOVER-	0 HR. N/
OLLAR ELE	V. 252.6	6 ft	T	OTAL DEPTH 31.0 ft	NORTHING	744,844		EASTING 2,106,481	24 HR. FIA
RILL RIG/HAMI	MER EFF./I	DATE TE	R6847 (CME-75 91% 06/04/2013		DRILL METHO	D SPT	Core Boring HAMN	MER TYPE Automatic
RILLER Tu	ırnage, J.	R.	S	TART DATE 02/13/15	COMP. DA	TE 02/13/15		SURFACE WATER DEPTH N	/A
EV DRIVE ELEV (ft)	P5;;;;;;	.5ft 0.5ft		BLOWS PEI 0 25 50		SAMP. NO. MO	0 1 G	SOIL AND ROCK DES	SCRIPTION DEPTH
50 249.2	3.4	53 27	4			<u></u>		- 252.6 GROUND SURF 0.3' CONCRETE SII ROADWAY EMBAN ORANGE-BROWN, FINE WITH COBBLES, MIC	DEWALK IKMENT SANDY SILT,
45 244.2	8.4 - - - - -	1 1	2	31		W		243.6 ALLUVIAL 241.1 DARK GRAY, CLAYEY SIL GRAY, FINE TO COARSI	T, MICACEOUS
239.2 35 234.2 232.1	18.4	9 5	4	• • • • • • • • • • • • • • • • • • • •	100/0.2	W		LITTLE SILT AND GRAVE RESIDUAL GRAY AND BLACK, SAPF SAND, MICACE WEATHERED R 232.1 (GNEISS)	ROLITIC, SILTY OUS ROCK
25	_ 60 - - - - - -	0/0.0			60/0.0	RS-3		CRYSTALLINE F BLUE-GRAY, WHITE, , MODERATE WEATHERIN MEDIUM HARD TO HAR MODERATELY CLOSE SPACING, GNE REC=93%, RQD=829	AND BLACK, NG TO FRESH, D, CLOSE TO FRACTURE EISS
	-							221.6 Boring Terminated at Elev CRYSTALLINE ROCK	ation 221.6 ft in ((GNEISS)
								-	

GEOTECHNICAL BORING REPORT

SHEET 11 OF 16

WBS 42263	TIP B-5121 CO	CORE LOG	GEOLOGIST Alexander, M. J	I
		VENUE) OVER PIGEON HOUSE BRA	<u> </u>	GROUND WTR (ft)
BORING NO. B2-A	STATION 20+62	OFFSET 20 ft LT	ALIGNMENT -FLYOVER-	0 HR. N/A
	TOTAL DEPTH 31.0 ft	NORTHING 744,844		⊣
COLLAR ELEV. 252.6 ft		DRILL METHOD SPT	EASTING 2,106,481	
	TER6847 CME-75 91% 06/04/2013	<u> </u>		MER TYPE Automatic
DRILLER Turnage, J. R.	START DATE 02/13/15	COMP. DATE 02/13/15	SURFACE WATER DEPTH	N/A
CORE SIZE NQ2	TOTAL RUN 10.5 ft DRILL RUN STRA	TA		
ELEV DEPTH RUN F			ESCRIPTION AND REMARKS	DEPTH (
232.1			Begin Coring @ 20.5 ft	
225	=60/0.0 (0.4) (0.4) (0.4) (2.8/0.5) (80% 80% 80% 80% 80% 80% 80% 80% 80% 80%	FRESH, MEDIÚM HA	CRYSTALLINE ROCK TE, AND BLACK, MODERATE WEA ARD TO HARD, CLOSE TO MODEI FRACTURE SPACING, GNEISS 1=7, R2=17, R3=10, R4=20, R5=7 RMR = 61	
		Boring Terminati	ed at Elevation 221.6 ft in CRYSTAL (GNEISS)	LINE ROCK

CORE PHOTOGRAPHS

42263 (B-5121) BRIDGE NO. 213 ON -FLYOVER- (WADE AVENUE) OVER PIGEON HOUSE BRANCH

B2-A **BOX 1: 20.5 - 29.6 FEET**

26.0 FEET

B2-A **BOX 2: 29.6 - 31.0 FEET**





SHEET 13 OF 16

VBS	42263				T	IP B-5121 CO	DUNTY WA	AKE				GEOLOGIST Alexander, M. J.	
ITE	DESCRI	PTION	BRID	DGE N	O. 213	3 ON -FLYOVER- (WADE :	AVENUE) C	VER P	IGEON	HOUS	E BRA	ANCH	GROUND WTR (
ORI	NG NO.	B2-B			S	TATION 20+83	OFF	SET 1	9 ft RT			ALIGNMENT -FLYOVER-	0 HR. 11
OLL	AR ELE	V. 25	1.9 ft		T	OTAL DEPTH 23.1 ft	NOR	THING	744,88	38		EASTING 2,106,489	24 HR. FIA
RILL	RIG/HAM	MER EF	F./DATI	E TER	R6847 (CME-75 91% 06/04/2013			DRILL M	ETHOD) H.S.	. Augers HAMN	IER TYPE Automatic
RILI	L ER Tu	rnage,	J. R.		S	TART DATE 02/12/15	COM	IP. DA	E 02/1	12/15		SURFACE WATER DEPTH N	/A
ΕV	DRIVE ELEV	DEPTH	BLC	w co	UNT	BLOWS PER	FOOT		SAMP.	lacksquare		SOIL AND ROCK DES	CRIPTION
t)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25 50	75	100	NO.	<u>MOI</u>	G	ELEV. (ft)	DEPTH
55		-									l ⊦		
	‡											251.9 GROUND SURF	-ACE
50	‡											ROADWAY EMBAN	KMENT
_	249.0	2.9	3	4	3					N.4		ORANGE-BROWN, CLA MICACEOUS	
	245.9	. 6.0				$\left \begin{array}{c c} \bullet^7 & \cdots & \cdots & \cdots & \cdots \\ \bullet & \bullet & \cdots & \bullet & \cdots \end{array} \right \stackrel{\cdot}{\cdot}$				М		246.9 ORANGE-BROWN, FINE	CANDY OILT
5	244.0	- 6.0 - 7.9	3	2	2	4				М		- _{244.4} MICACEOUS	
Ī	744.0	<i></i>	2	2	2					D	0000	ALLUVIAL BROWN-GRAY, SAND,	MICACEOUS
0	‡	-									000	240.9 GRAY, FINE TO COARSE	
	239.0	12.9	4	3	12					C-4	000	LITTLE SILT AND GRAVEI	
	‡				'-	15				Sat.	-	RESIDUAL	•
5	234.0	- - - 17.9								М	:::: <u> </u>	TAN-BROWN, WHITE, . SAPROLITIC, SILTY SAND	
ŀ		. 17.9	35	65/0.1		: : ! -:- -:-		 100/0.6				233.4 WEATHERED R	OCK
0	‡					::!:+===+						(GNEISS)	
_	229.0 328.8	- 22.9 23.1	100/0.2					100/0.2			977	228.8 TAN AND WHITE, SAPR	OLITIC, SILTY 🗀 🗀
			60/0.0	1				60/0.0				SAND, MICACE WEATHERED R	
		-									ΙĖ	GNEISS) Boring Terminated WITH	I STANDARD
	‡											PENETRATION TEST I Elevation 228.8 ft on CRYS	REFUSAL at
	‡											(GNEISS)	TALLINE ROOK
	1	- -										-	
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MICC	40000				1_	FID D 5404		ORE L	UG			CEOLOGICE AL		
	42263			205 1		7 IP B-5121		/ WAKE	NOEC::	HOUS		GEOLOGIST Alexander, M. J.	1	VTP (**
				JGE N		3 ON -FLYOVER- (W	ADE AVEN	<i>'</i>		HOUS	E BR		GROUND V	
	NG NO.					STATION 21+70		OFFSET (40		ALIGNMENT -FLYOVER-	0 HR.	6.5
	AR ELE					TOTAL DEPTH 33.8		NORTHING	· ·			EASTING 2,106,400	24 HR.	8.0
				E TEF		DIEDRICH D-50 79% 09/1			DRILL N) H.S	 	MER TYPE Auto	omatic
DRILLER Eklund, M. A.						START DATE 03/02/		COMP. DA	_	02/15	1	SURFACE WATER DEPTH N	/A	
ELEV (ft)	DRIVE ELEV	DEPTH (ft)	0.5ft	W CO	1	- 	S PER FOOT 50	75 100	SAMP.	V	0	SOIL AND ROCK DES		
	(ft)	(1.1)	0.511	0.5ft	0.5ft	. 0 23	30	75 100	NO.	/MOI	G	ELEV. (ft)		DEPTH (ft
250		-										_		
	-	<u> </u>			1	 		1				247.7 GROUND SURI		0.
245	-	F										- ORANGE-BROWN AN	ID BROWN,	
	244.0	3.7	3	3	3	1				М		- CLAYEY SAND, MIC	ACEOUS	
	-	Ŧ				[] [] [] [] [] [] [] [] [] []				IVI		. -		
40	239.0	8.7								V		- -		
	239.0 -	- 0./	WOH	1	0					Sat.		- 238.7 - ALLUVIAL		9.
35	-	‡					.					- GRAY AND BROWN, C - WITH LITTLE GRAVEL 1	_AYEY SAND 3 FEET TO 15	
აა	234.0	13.7		14	10		+	1				FEET -		
	-	ţ	8	14	18	32.	.			Sat.		- 232.7 - RESIDUAL		15.
30	-	Ł					.` \~					- GRAY, WHITE, ANI - SAPROLITIC, SILTY SANI	D BLACK,	2
	229.0	18.7	5	32	55		.			М		- SAFROLITIO, SILTI SANI	o, MICACLOUS	,
	-	F					.			'''		• •		
25	224.0	1,,,,						/				-		
	224.0	23.7	30	38	28		· · · · •66	, 		М		• •		
	-	‡					: : : ; ; :					- - 220.7		27.
20_	219.0	28.7					 					- WEATHERED F - (GNEISS)	OCK	
	-	-	45	55/0.2	2		.	- 100/0.7			10	- (GIVEIGO)		
15	-	F					.				900	•		
	214.0	33.7	60/0.1					60/0.1			977		POCK	33. \(\sigma 33.
	-	‡	00/0.1	1								(GNEISS)		
	_	‡									-	 Boring Terminated WITH PENETRATION TEST 	REFUSAL at	
	-	‡										- Elevation 213.9 ft in CRYS - (GNEISS)	TALLINE ROCK	<
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GEOTECHNICAL BORING REPORT BORE LOG

SHEET 14 OF 16

												<u>/NL</u>	<u>- </u>	<u>UG</u>							
WBS	42263	3			TI	IP B-€	5121			COU	VTY	WAK	Œ				GEOLOG	IST Alexan	der, M. J	J.	
SITE	DESCR	IPTION	BRI	DGE N	O. 213	ON -F	LYO	VER- (WAL	E AV	ENU	E) OV	ER P	IGEON	HOUS	E BR	ANCH			GROUN	D WTR (ft
	NG NO.					TATIO					\neg			28 ft RT				NT -FLYC	VER-	0 HR.	6.0
	LAR ELE				-	OTAL			3 ft		-			744,9	43		+	2,106,416		24 HR.	FIAD
	. RIG/HAN			e TEE						2012		10111				1 40	1	2,100,410		MER TYPE	
				E IER							Τ.					л.5	. Augers				Automatic
DRIL	LER E	· ·				TART	DATE					COMP	DA	E 03/		1	SURFACI	WATER D	EPTH N	N/A	
(ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	0.5ft	_	0	2	BLO\	NS P	ER FO		5	100	SAMP NO.	MOI	O G	ELEV. (ft)	SOIL AND F	ROCK DE	SCRIPTION	DEPTH (
250	-																-				
245	- - 244.3	1.0				 			•				-				245.3		JND SUR	RFACE_	0
		‡	3	3	2	 5.							: :		Sat.		242.8 T.	AN AND ORA SANI	NGE-BR		EY2
240	241.8 - -	3.5	1	1	3	4				: :		: :			W		<u> </u>	I	RESIDUA	L	
240	239.3	6.0	3	3	1										l		SA	DARK GRAY NDY CLAY, I			
	236.8 -	8.5	3	3	1	🕈 -									W		237.8		SAND LA	AYERS	7
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LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.: 42263 (B5121) F.A. NO.: BRNHS-0070(119)

COUNTY: WAKE

BRIDGE NO. 213 ON -FLYOVER- (WADE AVENUE) OVER PIGEON HOUSE BRANCH AT STATION 20+48.94

Sample #	Boring #	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD (%)	Length (in)	Diameter (in)	Unit Weight (PCF)	Unconfined Compressive Strength (KSI)	Remarks
RS-1	В1-В	12.0-12.7	INJECTED GNEISS	€ Zig	96	3.86	1.98	161.7	16.5	
RS-2	B1-B	18.1-18.8	INJECTED GNEISS	€ Zig	84	3.87	1.98	166.0	12.4	_
RS-3	B2-A	25.3-25.9	INJECTED GNEISS	€ Zig	66	3.84	1.98	165.1	8.4	

SITE PHOTOGRAPH

42263 (B-5121)

BRIDGE NO. 213 ON -FLYOVER- (WADE AVENUE) OVER PIGEON HOUSE BRANCH



LOOKING NORTHEAST TOWARD BENT 1 AND BENT 2